

**EXAMINER'S AMENDMENT**

1. An extension of time under 37 CFR 1.136(a) is required in order to make an examiner's amendment which places this application in condition for allowance. During a telephone conversation conducted on 26 August 2009, Charles Leyes (61317) requested an extension of time for one MONTH(S) and authorized the Director to charge Deposit Account No. 16-0605 the required fee of \$130.00 for this extension and authorized the following examiner's amendment. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. The following title shall replace all prior versions of the title of the application:

Adaptive Reservation of Channelization Codes and Allowed Power

3. The claim listing beginning on the next page shall replace all prior versions of the claims.

**Listing of Claims:**

73. (Currently Amended) A method, comprising:

adaptively setting a reservation of channelization codes or an allowed power for a downlink shared channel, DSCH, of a transceiver based on parameters for a minimum allowed spreading factor or an allowed power level;

setting the parameters depending on a traffic load, a total load of a cell, and an availability of channelization codes;

measuring an average transmitted power of a physical downlink shared channel;

measuring a relative activity factor of the physical downlink shared channel, the relative activity factor defining the ratio between silence and activity of the physical downlink shared channel during an observation period;

measuring a weighted code blocking rate, the weighted code blocking rate ~~comprising~~ comprising a relative time during an observation period in which a larger bit rate than an actually allocated bit rate could have been allocated to a user equipment according to a link ~~adaption~~ adaptation criteria for controlling the downlink shared channel; and

adaptively adjusting at least one of a root spreading factor and the allowed power for the downlink shared channel of the transceiver based on results of the measuring; and

decreasing the allowed power when A is smaller than  $TH_{A1}$  and  $P_{txDSCHest}$  is smaller than  $(P_{txPDSCHallowed} - X)$ ;

wherein A comprises an activity factor of a downlink channel,  $TH_{A1}$  comprises a threshold parameter,  $P_{txDSCHest}$  comprises an estimated power of the downlink shared channel,  $P_{txPDSCHallowed}$  comprises an allowed power for the physical downlink shared channel, and X comprises a preset power value.

74. (Cancelled)

75. (Currently Amended) The method of claim ~~74~~73, wherein the ~~reserved~~allowed power is decreased by less than or equal to X.

76. (Currently Amended) ~~The method of claim 73, A method,~~ comprising:

~~adaptively setting a reservation of channelization codes or an allowed power for a downlink shared channel of a transceiver based on parameters for a minimum allowed spreading factor or an allowed power level;~~

~~setting the parameters depending on a traffic load, a total load of a cell, and an availability of channelization codes;~~

~~measuring an average transmitted power of a physical downlink shared channel;~~

~~measuring a relative activity factor of the physical downlink shared channel, the relative activity factor defining the ratio between silence and activity of the physical downlink shared channel during an observation period;~~

~~measuring a weighted code blocking rate, the weighted code blocking rate comprising a relative time during an observation period in which a larger bit rate than an actually allocated bit rate could have been allocated to a user equipment according to a link adaptation criteria for controlling the downlink shared channel;~~

~~adaptively adjusting at least one of a root spreading factor and the allowed power for the downlink shared channel of the transceiver based on results of the measuring; and~~

increasing ~~the~~ allowed power by X when A is greater than  $TH_{A2}$  and  $P_{txDSCHest}$  is greater than  $(P_{txPDSCHallowed} - X)$ ,

wherein A comprises an activity factor of a downlink channel,  $TH_{A2}$  comprises a threshold parameter,  $P_{txDSCHest}$  comprises an estimated power of the downlink shared channel,  $P_{txPDSCHallowed}$  comprises ~~an allowed power allowed~~ for the physical downlink shared channel, and X comprises a preset power value.

77. (Currently Amended) The method of claim 73, further comprising:

allowing higher bit rates, comprising decreasing  $SF_{min}$  when B is greater than  $TH_B$  and A is greater than  $TH_{A2}$ ;

wherein  $SF_{min}$  comprises a minimum spreading factor,  $B$  comprises a weighted code-blocking rate,  $A$  comprises an activity factor of the downlink channel, and  $TH_B$  and  $TH_{A2}$  comprise threshold values.

78. (Currently Amended) The method of claim 73, further comprising:

decreasing a maximum bit rate, comprising increasing  $SF_{min}$  when  $B = zero$  and  $L_{code}$  is greater than  $TH_{code}$ ;

wherein  $SF_{min}$  comprises a minimum spreading factor,  $B$  comprises a weighted code-blocking rate,  $L_{code}$  comprises a current load of a code tree, and  $TH_{code}$  comprises threshold parameter.

79-82. (Cancelled)

83. (Currently Amended) An apparatus, comprising:

a processor configured to control a setter and a measurer;

the setter configured to adaptively set a reservation of channelization codes or an allowed power for a downlink shared channel based on parameters for a minimum allowed spreading factor and an allowed power level;

wherein the parameters depending on a traffic load, a load of a cell, and an availability of channelization codes; and

the measurer configured to measure:

an average transmitted power of a physical downlink shared channel,

a relative activity factor of the physical downlink shared channel, the relative activity factor defining the ratio between silence and activity of the physical downlink shared channel during an observation period, and

a weighted code blocking rate, the weighted code blocking rate representing the relative time during observation period where a larger bit rate than the actually allocated bit rate could have been allocated to a user equipment according to a link adaption criteria for controlling the downlink shared channel; and

wherein the setter is further configured to adjust at least one of a root spreading factor and allowed power for the downlink shared channel based on results of the measurement; the measurement;

wherein the setter is further configured to decrease the allowed power when A is smaller than  $TH_{A1}$  and  $P_{txDSCHest}$  is smaller than  $(P_{txPDSCHallowed} - X)$ ; and

wherein A comprises an activity factor of a downlink channel,  $TH_{A1}$  comprises a threshold parameter,  $P_{txDSCHest}$  comprises an estimated power of the downlink shared channel,  $P_{txPDSCHallowed}$  comprises an allowed power for the physical downlink shared channel, and X comprises a preset power value.

84. (Cancelled)

85. (Currently Amended) The apparatus of claim 83, wherein the reserved-allowed power is decreased by less than or equal to X.

86. (Cancelled)

87. (Currently Amended) The apparatus of claim 83, wherein the setter is further configured to:

allowing higher bit rates, comprising decreasing  $SF_{min}$  when B is greater than  $TH_B$  and A is greater than  $TH_{A2}$ ;

wherein  $SF_{min}$  comprises a minimum spreading factor, B comprises a weighted code-blocking rate, A comprises an activity factor of the downlink channel, and  $TH_B$  and  $TH_{A2}$  comprise threshold values.

88. (Currently Amended) The apparatus of claim 83, wherein the setter is further configured to:

decrease a maximum bit rate, comprising increasing  $SF_{min}$  when B = zero and  $L_{code}$  is greater than  $TH_{code}$ ;

wherein  $SF_{min}$  comprises a minimum spreading factor,  $B$  comprises a weighted code-blocking rate,  $L_{code}$  comprises a current load of a code tree, and  $TH_{code}$  comprises threshold parameter.

89-92. (Cancelled)

93. (Currently Amended) An apparatus, comprising:

setting means for adaptively set a reservation of channelization codes or an allowed power for a downlink shared channel based on parameters for a minimum allowed spreading factor and an allowed power level;

wherein the parameters depending on a traffic load, a load of a cell, and an availability of channelization codes;

measuring means for measuring an average transmitted power of a physical downlink shared channel, a relative activity factor of the physical downlink shared channel, the relative activity factor defining the ratio between silence and activity of the physical downlink shared channel during an observation period, and a weighted code blocking rate, the weighted code blocking rate representing the relative time during observation period where a larger bit rate than the actually allocated bit rate could have been allocated to a user equipment according to a link adaptionadaptation criteria for controlling the downlink shared channel; and

adjusting means for adjusting a root spreading factor and the allowed power for the downlink shared channel based on the measuring; and

increasing means for increasing the allowed power by  $X$  when  $A$  is greater than  $TH_{A2}$  and  $P_{txDSCHest}$  is greater than  $(P_{txPDSCHallowed} - X)$ ;

wherein  $A$  comprises an activity factor of a downlink channel,  $TH_{A2}$  comprises a threshold parameter,  $P_{txDSCHest}$  comprises an estimated power of the downlink shared channel,  $P_{txPDSCHallowed}$  comprises an allowed power for the physical downlink shared channel, and  $X$  comprises a preset power value.

94-96. (Cancelled)

97. (Currently Amended) An apparatus, ~~configured to measure comprising:~~  
a processor; and  
a memory containing instructions to cause the processor to perform the following:  
measure an average transmitted power of a physical downlink shared channel;  
measure a relative activity factor of the physical downlink shared channel, the relative activity factor defining the ratio between silence and activity of the physical downlink shared channel during an observation period; and  
measure a weighted code blocking rate, the weighted code blocking rate representing the relative time during observation period where a larger bit rate than the actually allocated bit rate could have been allocated to a user equipment according to a link ~~adaption~~adaptation criteria for controlling the downlink shared channel; and  
increase the allowed power by X when A is greater than  $TH_{A2}$  and  $P_{txDSCHest}$  is greater than  $(P_{txPDSCHallowed} - X)$ ; and  
wherein A comprises an activity factor of a downlink channel,  $TH_{A2}$  comprises a threshold parameter,  $P_{txDSCHest}$  comprises an estimated power of the downlink shared channel,  $P_{txPDSCHallowed}$  comprises an allowed power for the physical downlink shared channel, and X comprises a preset power value.

98-100. (Cancelled)

101. (Currently Amended) A ~~computer program embodied on a computer-readable storage medium~~, comprising computer-executable components that cause a processor to perform the following:

~~adaptively setting a reservation of channelization codes or an allowed power for a downlink shared channel of a transceiver based on parameters for a minimum allowed spreading factor or an allowed power level;~~

setting the parameters depending on a traffic load, a total load of a cell and an availability of channelization codes;

measuring an average transmitted power of a physical downlink shared channel;

measuring a relative activity factor of the physical downlink shared channel, the relative activity factor defining the ratio between silence and activity of the physical downlink shared channel during an observation period;

measuring a weighted code blocking rate, the weighted code blocking rate being defined as the relative time during an observation period where a larger bit rate than the actually allocated bit rate could have been allocated to a user equipment according to a link adaption adaptation criteria for controlling the downlink shared channel; and

adaptively adjusting a root spreading factor and the allowed power for the downlink shared channel of the transceiver based on results of the measuring; and

decreasing the allowed power when A is smaller than  $TH_{A1}$  and  $P_{txDSCHest}$  is smaller than  $(P_{txPDSCHallowed} - X)$ ; and

wherein A comprises an activity factor of a downlink channel,  $TH_{A1}$  comprises a threshold parameter,  $P_{txDSCHest}$  comprises an estimated power of the downlink shared channel,  $P_{txPDSCHallowed}$  comprises an allowed power for the physical downlink shared channel, and X comprises a preset power value.

102. (Cancelled)

103. (Currently Amended) The computer-readable storage medium program of claim 102<sub>101</sub>, wherein the reserved allowed power is decreased by less than or equal to X.

104. (Cancelled)

105. (New) The method of claim 76, further comprising:

allowing higher bit rates, comprising decreasing  $SF_{min}$  when B is greater than  $TH_B$  and A is greater than  $TH_{A2}$ ;

wherein  $SF_{min}$  comprises a minimum spreading factor,  $B$  comprises a weighted code-blocking rate,  $A$  comprises an activity factor of the downlink channel, and  $TH_B$  and  $TH_{A2}$  comprise threshold values.

106. (New) The method of claim 76, further comprising:

decreasing a maximum bit rate, comprising increasing  $SF_{min}$  when  $B$  = zero and  $L_{code}$  is greater than  $TH_{code}$ ;

wherein  $SF_{min}$  comprises a minimum spreading factor,  $B$  comprises a weighted code-blocking rate,  $L_{code}$  comprises a current load of a code tree, and  $TH_{code}$  comprises threshold parameter.

107. (New) The apparatus of claim 93, further comprising:

bit-rate-adjusting means for allowing higher bit rates, comprising decreasing  $SF_{min}$  when  $B$  is greater than  $TH_B$  and  $A$  is greater than  $TH_{A2}$ ;

wherein  $SF_{min}$  comprises a minimum spreading factor,  $B$  comprises a weighted code-blocking rate,  $A$  comprises an activity factor of the downlink channel, and  $TH_B$  and  $TH_{A2}$  comprise threshold values.

108. (New) The apparatus of claim 93, further comprising:

bit-rate-adjusting means for decreasing a maximum bit rate, comprising increasing  $SF_{min}$  when  $B$  = zero and  $L_{code}$  is greater than  $TH_{code}$ ;

wherein  $SF_{min}$  comprises a minimum spreading factor,  $B$  comprises a weighted code-blocking rate,  $L_{code}$  comprises a current load of a code tree, and  $TH_{code}$  comprises threshold parameter.

109. (New) The computer-readable storage medium of claim 101, wherein the processor is caused to further perform:

allowing higher bit rates, comprising decreasing  $SF_{min}$  when  $B$  is greater than  $TH_B$  and  $A$  is greater than  $TH_{A2}$ ;

wherein  $SF_{min}$  comprises a minimum spreading factor,  $B$  comprises a weighted code-blocking rate,  $A$  comprises an activity factor of the downlink channel, and  $TH_B$  and  $TH_{A2}$  comprise threshold values.

110. (New) The computer-readable storage medium of claim 101, wherein the processor is caused to further perform:

decreasing a maximum bit rate, comprising increasing  $SF_{min}$  when  $B = \text{zero}$  and  $L_{code}$  is greater than  $TH_{code}$ ;

wherein  $SF_{min}$  comprises a minimum spreading factor,  $B$  comprises a weighted code-blocking rate,  $L_{code}$  comprises a current load of a code tree, and  $TH_{code}$  comprises threshold parameter.

### **REASONS FOR ALLOWANCE**

4. The following is an examiner's statement of reasons for allowance:

A statement for reasons of allowance was presented in the non-final office action dated 02 January 2008. In addition, the examiner would like to note that the art of record fails to anticipate or render obvious certain features found in the independent claims. Specifically, the art of the record fails to disclose resource management of codes and allowed power using the adjustment criteria and techniques disclosed within the independent claims.

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFREY NICKERSON whose telephone number is (571)270-3631. The examiner can normally be reached on M-Th, 9:00am - 7:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on (571)272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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